

Serial No.: 09/712,075
 Inventor(s): David E. Wenstrup

U.S. PTO Customer No. 25280
 Case No.: 5060 WO

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Milliken & Company
 Inventors: David E. Wenstrup
 PCT Application Number:
 Filed: October 26, 2001
 Priority Application Number: 09/712,075
 Priority Date: November 14, 2000
 For: **MOLDABLE COMPOSITE MATERIAL AND METHOD OF PRODUCING**
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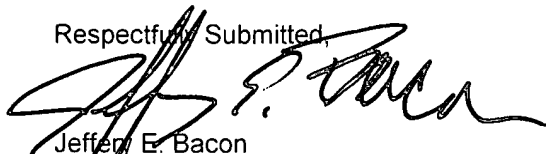
PETITION UNDER 37 CFR §1.10 (e)

The above referenced application was submitted to the Patent Office by Express Mail on October 26, 2001. However, it has recently come to the attention of Applicant, that the Patent Office may not have received the above referenced application. Enclosed here with is a true copy of the original deposited papers that constitute the correspondence, showing the number of the "Express Mail" mailing label thereon. Also enclosed is a copy of the Express Mail mailing label indicating the deposit date of October 26, 2001. Therefore, Applicant respectfully petitions the Commissioner to consider such correspondence as being filed in the Office on the USPS deposit date.

This situation came to the Applicants attention because it is now time to file the demand for Chapter II Examination. Also enclosed herewith, is a demand for Chapter II Examination of that application.

Applicant respectfully requests the entry of the enclosed papers, including the demand for Chapter II, for the above referenced application. In the event that further information is needed by the Patent Office, please do not hesitate to contact us.

Respectfully Submitted,



Jeffrey E. Bacon
 Attorney for Applicants
 Reg. No. 35,055
 Telephone: (864) 503-1160

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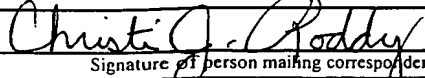
Date	26 October 2001
International Application No.	
Attorney Docket No.	WO5060

I. Certification under 37 CFR 1.10 (if applicable)

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Express Mail mailing number

26 October 2001
Date of Deposit

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Typed or printed name of person mailing correspondence

II. ☒ New International Application

TITLE	MOLDABLE COMPOSITE MATERIAL AND METHOD OF PRODUCING SAME
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Earliest priority date (Day/Month/Year)
14 November 2000

SCREENING DISCLOSURE INFORMATION: In order to assist in screening the accompanying international application for purposes of determining whether a license for foreign transmittal should and could be granted and for other purposes, the following information is supplied. (Note: check as many boxes as apply):

- A. ☐ The invention disclosed was not made in the United States.
- B. ☐ There is no prior U.S. application relating to this invention.
- C. ☒ The following prior U.S. application(s) contain subject matter which is related to the invention disclosed in the attached international application. (NOTE: priority to these applications may or may not be claimed on form PCT/RO/101 (Request) and this listing does not constitute a claim for priority.)

application no.	09/712,075	filed on	14 November 2000
application no.		filed on	

- D. ☐ The present international application contains additional subject matter not found in the prior U.S. application(s) identified in paragraph C. above. The additional subject matter is found on pages and ☐ DOES NOT ALTER ☐ MIGHT BE CONSIDERED TO ALTER the general nature of the invention in a manner which would require the U.S. application to have been made available for inspection by the appropriate defense agencies under 35 U.S.C. 181 and 37 CFR 5.1. See 37 CFR 5.15

III. ☐ A Response to an Invitation from the RO/US. The following document(s) is(are) enclosed:

- A. ☐ A Request for An Extension of Time to File a Response
- B. ☐ A Power of Attorney (General or Regular)
- C. ☐ Replacement pages:

pages		of the request (PCT/RO/101)	pages		of the figures
pages		of the description	pages		of the abstract
pages		of the claims			

- D. ☐ Submission of Priority Documents

Priority document		Priority document	
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- E. ☐ Fees as specified on attached Fee Calculation sheet form PCT/RO/101 annex

IV. ☐ A Request for Rectification under PCT 91 ☐ A Petition ☐ A Sequence Listing Diskette

V. ☐ Other (please specify):

The person signing this form is the:

<input type="checkbox"/> Applicant
<input checked="" type="checkbox"/> Attorney/Agent (Reg. No.)
<input type="checkbox"/> Common Representative

Jeffery E. Bacon (Reg. No. 35,055)

Typed name of signer

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PCT REQUEST

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0	For receiving Office use only	
0-1	International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	Form - PCT/RO/101 PCT Request	
0-4-1	Prepared using	PCT-EASY Version 2.92 (updated 01.03.2001)
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	United States Patent and Trademark Office (USPTO) (RO/US)
0-7	Applicant's or agent's file reference	WO5060
I	Title of invention	MOLDABLE COMPOSITE MATERIAL AND METHOD OF PRODUCING SAME
II	Applicant	
II-1	This person is:	applicant only
II-2	Applicant for	all designated States
II-4	Name	MILLIKEN & COMPANY
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II-6	State of nationality	US
II-7	State of residence	US
II-8	Telephone No.	(864) 503-1160
II-9	Facsimile No.	(864) 503-1999
III-1	Applicant and/or inventor	
III-1-1	This person is:	inventor only
III-1-4	Name (LAST, First)	WENSTRUP, David E.
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IV-1	Agent or common representative; or address for correspondence The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name (LAST, First)	BACON, Jeffery E.
IV-1-2	Address:	Milliken & Company Legal Department (M-495) P.O. Box 1926 Spartanburg, SC 29304 United States of America
IV-1-3	Telephone No.	(864) 503-1160
IV-1-4	Facsimile No.	(864) 503-1999
IV-1-5	Agent's registration No.	35,055
V	Designation of States	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AP: GH GM KE LS MW MZ SD SL SZ TZ UG ZW and any other State which is a Contracting State of the Harare Protocol and of the PCT EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT EP: AT BE CH&LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR and any other State which is a Contracting State of the European Patent Convention and of the PCT OA: BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH&LI CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

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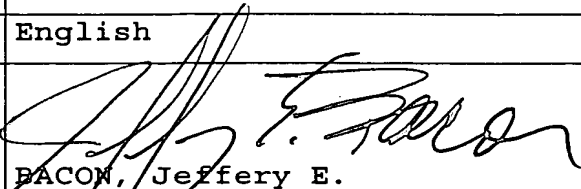
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V-5	Precautionary Designation Statement In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.		
V-6	Exclusion(s) from precautionary designations	NONE	
VI-1	Priority claim of earlier national application		
VI-1-1	Filing date	14 November 2000 (14.11.2000)	
VI-1-2	Number	09/712,075	
VI-1-3	Country	US	
VI-2	Priority document request The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI - 1	
VII-1	International Searching Authority Chosen	United States Patent and Trademark Office (USPTO) (ISA/US)	
VIII	Declarations	Number of declarations	
VIII-1	Declaration as to the identity of the inventor	-	
VIII-2	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	-	
VIII-3	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	-	
VIII-4	Declaration of inventorship (only for the purposes of the designation of the United States of America)	-	
VIII-5	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	-	
IX	Check list	number of sheets	electronic file(s) attached
IX-1	Request (including declaration sheets)	4	-
IX-2	Description	5	-
IX-3	Claims	4	-
IX-4	Abstract	1	EZABST00.TXT
IX-5	Drawings	2	-
IX-7	TOTAL	16	

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	Accompanying items	paper document(s) attached	electronic file(s) attached
IX-8	Fee calculation sheet	✓	-
IX-11	Copy of general power of attorney	✓	-
IX-17	PCT-EASY diskette	-	Diskette
IX-18	Other (specified):	Post Card Receipt and Transmittal Letter	-
IX-19	Figure of the drawings which should accompany the abstract	1	
IX-20	Language of filing of the international application	English	
X-1	Signature of applicant, agent or common representative		
X-1-1	Name (LAST, First)	BACON, Jeffery E.	

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10-1	Date of actual receipt of the purported international application	JCO4 Rec'd PCT/PTO 10 JUN 2002
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/US
10-6	Transmittal of search copy delayed until search fee is paid	

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MOLDABLE COMPOSITE MATERIAL AND METHOD OF PRODUCING SAME

Background

The present invention generally relates to a moldable composite material
5 having three layers: a surface layer to provide aesthetics and physical properties, a
cushion layer, and a moldable layer.

Composite materials have been used in automobiles for components such as
head liners, door panels, or the like. The composite materials typically used to form
the molded parts are a face material bonded to various backing materials and a rigid
10 molded material. The process of forming the completed molded part requires
several steps, including the joining of these materials. Additionally, many
combinations of materials used in forming these component parts are dissimilar and
are not readily recyclable.

Therefore, there exists a need for composite materials that can reduce the
15 number of individual components and required steps in forming these molded parts.
Additionally, there exists a need to standardize components of the final part,
allowing ease of recyclability..

Brief Description Of The Drawings

FIG. 1 is a cross sectional view of a composite nonwoven material illustrating
20 one embodiment of the present invention.

FIG. 2 is a block diagram, illustrating one method of forming the composite
nonwoven material in FIG. 1.

FIG. 3 is a block diagram, illustrating one method of forming component parts
from the composite nonwoven material of the present invention.

25 Detailed Description

Referring now to FIG. 1, there is shown cross sectional view of an
embodiment of the present invention, illustrated as the textile 10. The textile 10
includes a batting layer 100, a cushioning layer 200 disposed on the batting layer
100, and a face textile 400 adhered to the cushioning layer 200 by an adhesive 300.

The textile 10 produces a molded textile part that gives rigidity and cushion for use in automotive parts.

In the embodiment illustrated in FIG. 1, the batting layer 100 is a nonwoven material comprising of low melt temperature fibers 110 and high melt temperature fibers 120. The low melt fibers 110 and the high melt fibers 120 can be cross laid, air laid, or the like, to produce the batting layer 100 at the appropriate thickness. In one preferred embodiment, the low melt fibers 110 and the high melt fibers 120 are of the same chemical nature, such as a polyolefin, polyester, or the like. The low melt temperature fibers 110 typically comprise from about 50% to about 85% of the total weight of the batting layer 100. The high melt temperature fibers 120 typically comprise from about 15% to about 50% of the total weight of the batting layer 100. In one embodiment, the low melt fibers 110 are about 70% of the total weight of the batting layer 100, and the high melt fibers 120 are about 30% of the total weight of the batting layer 100. A typical thickness for the batting layer 100 ranges from about 4mm to about 30mm.

In the embodiment illustrated in FIG. 1, the cushioning layer 200 is a nonwoven material formed from staple fibers with high loft characteristics. In one embodiment, the staple fibers forming the cushion layer 200 are holofil fibers, or a similar type cushioning fiber. The cushioning layer 200 can be laid in the machine direction onto the batting layer 100 by techniques such as direct or may be corss-laid onto the preformed batting layer 100. In one preferred embodiment, the material of the cushioning layer 200 are of the same chemical nature as the low melt fibers 110 and the high melt fibers 120 in the batting layer 100, such as polyolefin, polyester, or the like. A typical thickness for the cushioning layer 200 is from about 0.5mm to about 3.0mm.

The batting layer 100 with the cushioning layer 200 thereon is needled to cause at least a portion of the fibers forming the cushion layer 200 to interlace with the nonwoven material of the batting layer 100. The interlacing of the batting layer 100 with the cushioning layer 200 can occur in the batting layer 100, the cushion layer 200, or both. The interlacing of the batting layer 100 and the cushion layer 200 gives the individual layers strength, as well as provide a mechanical bond between the two layers.

The face textile 400 is a material that has abrasion resistance, light fastness, color fastness, and other characteristics suitable for use as surfaces in automobiles. The face textile 400 can be woven, knitted, nonwoven, or any other construction suitable for the application. As illustrated in FIG. 1, the face material 400 is adhered to the cushioning layer 200 by the adhesive 300, and the combination of batting layer 100, cushion layer 200, adhesive 300, and face material 400 is laminated together via heat. In one preferred embodiment, the face textile 400 and the adhesive 300 are of the same chemical nature as the batting layer 100 and cushion layer 200, such as polyolefin, polyester, or the like. In one embodiment, the adhesive is a polyester adhesive of about 115°C to about 125°C and is used to allow the subsequent material to pass standard automotive environmental aging tests.

When the textile 10 is pre-formed as a single unit, subsequent processing the textile into particular component parts is facilitated by the pre-formed unit. In the present invention, it is believed that the number of required materials to make the subsequent component part is reduced by 50-95%. Additionally, the recycleability of the textile 10 is facilitated when the materials of the batting layer 100, cushion layer 200, adhesive 300, and face material 400, are all of the same chemical nature, such as polyolefin, polyester, or the like.

Referring now to FIG. 2, there is shown block diagram of an embodiment of a method for forming the composite nonwoven textile 10 from FIG. 1, illustrated as the method 500. The method 500 generally includes the steps of blending the batting layer fibers (510), forming a batting layer web (520), depositing a cushioning layer (530), needling the combination of the batting layer web and the cushioning layer web (540), applying a face textile and adhesive (550), heating the combination of the batting layer web, the cushion layer web, the adhesive, and the face textile (560), and rolling the composite textile into a roll or stacking the composite textile in pre-cut forms (570).

In step 510, the low melt fibers 110 and the high melt fibers 120 are blended for forming the batting layer 100. The low melt fibers 110 comprise from about 50% to about 85% of the total weight of the combined fibers, and the high melt fibers 120 comprise from about 15% to about 30% of the total weight of the combined fibers. In one embodiment, the low melt fibers 110 and the high melt fibers 120 are blended to

forming a blend comprising about 70% by weight of the total blend of the low melt fibers 110, and about 30% by weight of the total blend of the high melt fibers 120.

In step 520, the blended fibers for the batting layer 100 from step 510 are formed into the batting layer web. In one embodiment, the fibers are laid in the cross
5 direction to form the batting layer web.

In step 530, the cushion layer 200 is laid as a web onto the nonwoven web formed for the batting layer 100. The cushion layer 200 can be directed laid onto the batting layer 100, or can be a pre-formed web that is laid onto the batting layer 100. In a preferred embodiment, the fibers for the cushion layer 200 are of the same
10 chemical nature as the material for the batting layer 100. In one embodiment, the fibers of the cushion layer include holofil fibers.

In step 540, the stacked webs for the batting layer 100 and the cushion layer 200 are needled in order to stabilize the individual layers, and to create a connection between the two layers.

In step 550, the face textile is applied onto the cushion layer web with the adhesive there between. In one embodiment, the adhesive is place onto the cushion layer web, and then the face textile is placed onto the adhesive. In another
15 embodiment, the adhesive is place onto the face textile, and then the face textile is place onto the cushion layer web with the adhesive contacting the cushion layer web. The adhesive can be applied at a rate of from about 15 g/ft² to about 50 g/ft²,
20 and more preferably from about 15 g/ft² to about 25 g/ft². The adhesive can be applied as a preformed adhesive, a powder, an extrusion coating, or the like. In a preferred embodiment, the adhesive and the face textile are of the same chemical nature as the material for the batting layer web and the material for the cushion layer
25 web.

In step 560, the combination of the batting layer web, the cushion layer web, the adhesive, and the face textile, is heated to a temperature to accomplish thermal bonding and form the textile 100.

In step 570, the textile 10 is cooled and rolled into a roll for later use or plated
30 as pre-formed sheets for later use.

Referring now to FIG. 3, there is shown a block diagram of a process 600 for making component parts from the textile 10 from FIG. 1 according to the method in FIG. 2. The process 600 generally comprises the steps of unrolling a length of the

composite nonwoven textile (610), cutting the composite textile into segments (620), heating the segments of composite textile (630), and molding the heated segments of composite textile into a component part (640). Alternatively, when the composite textile is in the form of pre-formed sheets, the step of unrolling 610 and the step of cutting 620 can be skipped, and the pre-formed sheets can be processed starting with the heating step 630.

WHAT IS CLAIMED IS:

1. A moldable composite material, comprising:
a batting layer of nonwoven batting material, the nonwoven batting material
5 including low melt temperature fibers and high melt temperature fibers;
a cushion layer of nonwoven cushion material having a first side disposed
adjacent to said batting layer and a second side disposed opposite to
said batting layer, the nonwoven cushion material including cushion
fibers;
10 a face textile disposed adjacent to the second side of said cushion layer;
an adhesive adhering said face textile to said cushion layer;
wherein at least a portion of the cushion fibers in said cushion layer interlace
with the nonwoven batting material of said batting layer.
- 15 2. The moldable composite material according to claim 1, wherein the low melt
temperature fibers and the high melt temperature fibers of the nonwoven batting
material, the cushion fibers of the nonwoven cushion material, the face textile, and
the adhesive are all of the same chemical nature.
- 20 3. The moldable composite material according to claim 1, wherein the low melt
temperature fibers and the high melt temperature fibers of the nonwoven batting
material, the cushion fibers of the nonwoven cushion material, the face textile, and
the adhesive are all formed of the same material selected from the group consisting
of: polyolefin and polyester.
- 25 4. The moldable composite material according to claim 1, wherein the low melt
temperature fibers comprise between about 50% to about 85% of the total weight of
said batting layer of nonwoven batting material.
- 30 5. The moldable composite material according to claim 1, wherein the low melt
temperature fibers comprise about 70% of the total weight of said batting layer of
nonwoven batting material.

6. The moldable composite material according to claim 1, wherein the high melt temperature fibers comprise between about 15% to about 50% of the total weight of said batting layer of nonwoven batting material.

5 7. The moldable composite material according to claim 1, wherein the high melt temperature fibers comprise about 30% of the total weight of said batting layer of nonwoven batting material.

8. The moldable composite material according to claim 1, wherein the batting
10 layer is from about 4 mm thick to about 30 mm thick.

9. The moldable composite material according to claim 1, wherein the cushion layer is from about 0.5 mm thick to about 3 mm thick.

15 10. The moldable composite material according to claim 1, wherein the cushion fibers of said cushion layer comprises holofil fibers.

11. The moldable composite material according to claim 1, wherein said nonwoven batting material is cross direction laid and said nonwoven cushion
20 material is machine direction laid.

12. A method of forming a composite material, comprising the steps of:
blending low melt temperature fibers with high melt temperature fibers;
forming a batting layer web from the combined low melt temperature fibers
25 and high melt temperature fibers;
depositing a cushion layer web of cushion fibers on the batting layer web;
needling the combination of the batting layer web and the cushion layer web;
applying a face textile on the cushion layer web with an adhesive
therebetween;
30 heating the combination of the batting layer web, the cushion layer web, the adhesive, and the face textile to a temperature to accomplish thermal bonding.

13. The method according to claim 12, further including the step of pre-selecting the high melt temperature fibers, the low melt temperature fibers, the cushion fibers, the adhesive, and the face textile such that all are formed of material from the same chemical nature.

5

14. The method according to claim 12, wherein the step of blending includes proportioning the blend to have between about 50% and about 85% of the low melt temperature fibers per total weight of the combined blend of the low melt temperature fibers and the high melt temperature fibers.

10

15. The method according to claim 12, wherein the step of blending includes proportioning the combined blend to have about 70% of the low melt temperature fibers per total weight of the combined blend of the low melt temperature fibers and the high melt temperature fibers.

15

16. The method according to claim 12, wherein the step of blending includes proportioning the blend to have between about 15% and about 50% of the high melt temperature fibers per total weight of the combined blend of low melt temperature fibers and high melt temperature fibers.

20

17. The method according to claim 12, wherein the step of blending includes proportioning the combined blend to have about 30% of the high melt temperature fibers per total weight of the combined blend of the low melt temperature fibers and the high melt temperature fibers.

25

18. The method according to claim 12, wherein the step of forming the batting layer web includes forming batting layer web with the low melt temperature fibers, and the high melt temperature fibers laid in the cross direction.

30

19. The method according to claim 18, wherein the step of forming the cushion layer web includes forming cushion layer web with the cushion fibers laid in the machine direction.

20. The method according to claim 12, wherein the step of forming the cushion layer web includes forming cushion layer web with the cushion fibers laid in the machine direction.

5 21. The method according to claim 12, wherein the step of depositing the cushion layer web includes laying the cushion fibers directly on the batting layer web.

22. The method according to claim 12, wherein the step of depositing the cushion layer web includes preforming the cushion layer web and applying the preformed
10 cushion layer web onto the batting layer web.

23. The method according to claim 12, further including the step of rolling the thermally bonded combination of the batting layer web, the cushion layer web, the adhesive, and the face textile into a roll.

15 24. A method according to claim 23, further comprising the steps of cutting a segment of the composite material from the roll, heating the segment of composite material to a molding temperature, and molding the sheet of composite material into a component part.

20 25. The method according to claim 12, further including the step of cutting the thermally bonded combination of the batting layer web, the cushion layer web, the adhesive, and the face textile into at least one sheet.

25 26. A method according to claim 25, further comprising the steps of heating the sheet of composite material to a molding temperature, and molding the sheet of composite material into a component part.

Abstract

A composite textile includes a batting layer, a cushion layer, and a face fabric. The batting layer has high melt temperature and low melt temperature fibers. The cushion layer is needled to the batting layer. The face fabric is bonded to the cushion layer by an adhesive. The face material/cushion layer/batting layer is heat set and rolled onto a roll for use in forming composite parts. The composite textile is more readily recyclable when the batting layer, the cushion layer, the adhesive, and the face material are all formed completely from material of the same chemical nature, such as polyolefin, polyester, or the like.

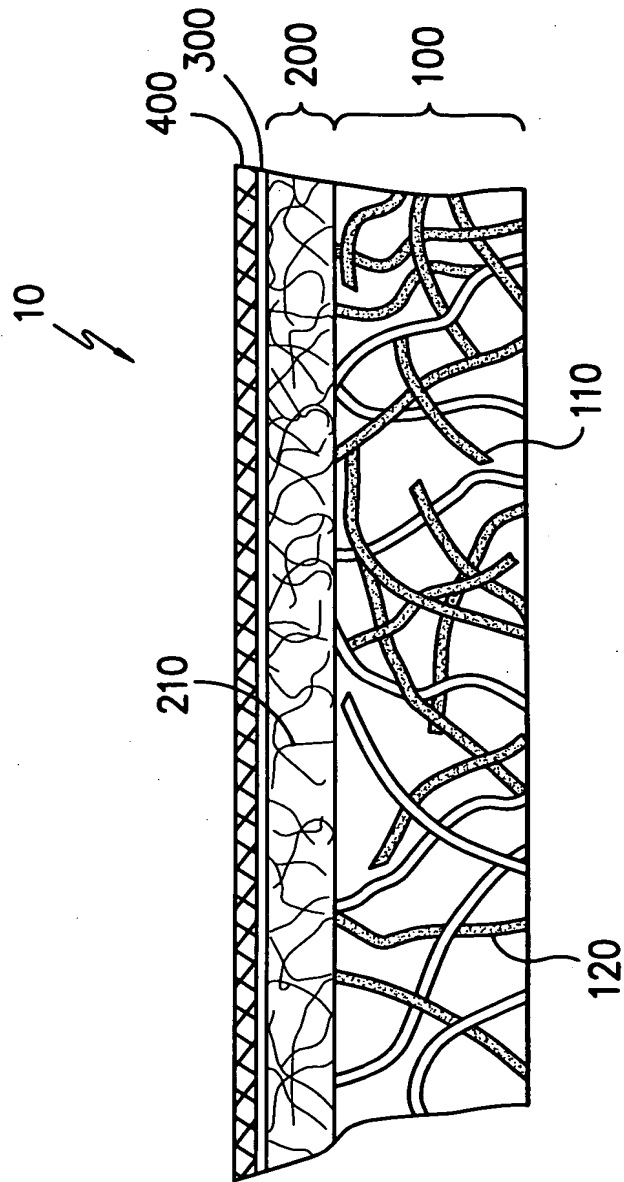


FIG. -1-

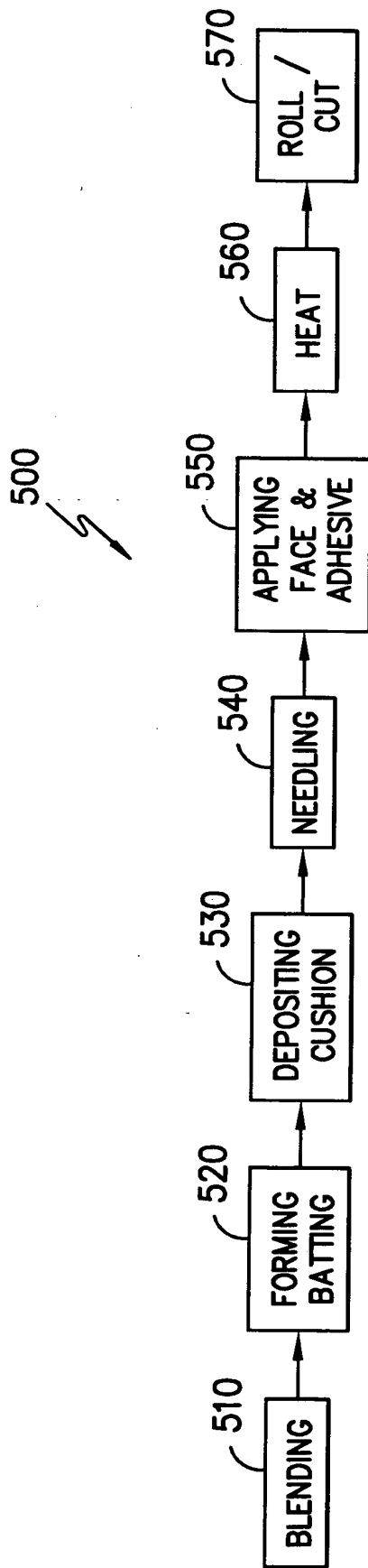


FIG. -2-

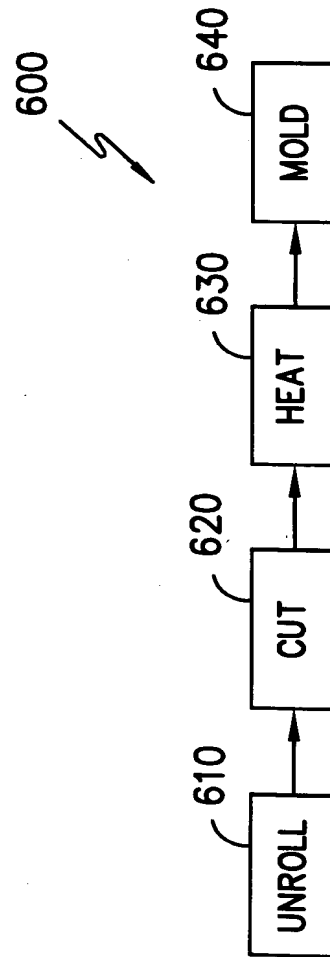


FIG. -3-

PCT (ANNEX - FEE CALCULATION SHEET)

WO5060

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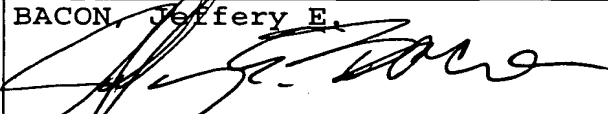
(This sheet is not part of and does not count as a sheet of the international application)

0	For receiving Office use only		
0-1	International Application No.		
0-2	Date stamp of the receiving Office		
0-4	Form - PCT/RO/101 (Annex)		
0-4-1	PCT Fee Calculation Sheet Prepared using	PCT-EASY Version 2.92 (updated 01.03.2001)	
0-9	Applicant's or agent's file reference	WO5060	
2	Applicant	MILLIKEN & COMPANY	
12	Calculation of prescribed fees	fee amount/multiplier	total amounts (USD)
12-1	Transmittal fee T	⇒	240
12-2	Search fee S	⇒	700
12-3	International fee		
	Basic fee (first 30 sheets) b1	382	
12-4	Remaining sheets	0	
12-5	Additional amount (X)	9	
12-6	Total additional amount b2	0	
12-7	b1 + b2 = B	382	
12-8	Designation fees		
	Number of designations contained in international application	89	
12-9	Number of designation fees payable (maximum 6)	6	
12-10	Amount of designation fee (X)	82	
12-11	Total designation fees D	492	
12-12	PCT-EASY fee reduction R	-117	
12-13	Total International fee (B+D-R) I	⇒	757
12-14	Fee for priority document		
	Number of priority documents requested	1	
12-15	Fee per document (X)	15	
12-16	Total priority document fee P	⇒	15
12-17	TOTAL FEES PAYABLE (T+S+I+P)	⇒	1,712
12-19	Mode of payment	authorization to charge deposit account	
12-20	Deposit account instructions		
	The receiving Office:	United States Patent and Trademark Office (USPTO) (RO/US)	
12-20-1	Authorization to charge the total fees indicated above.	✓	
12-20-2	Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.	✓	

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12-20-3	Authorization to charge the fee for priority document.	✓
12-21	Deposit account No.	04-0500
12-22	Date	26 October 2001 (26.10.2001)
12-23	Name and signature	BACON, Jeffery E. 

VALIDATION LOG AND REMARKS

13-2-2	Validation messages States	Green? More designations could be made. The following States have not been designated: US. Please verify.
13-2-3	Validation messages Names	Green? Inventor 1.: Where several first/given names are indicated, they should preferably be separated by a comma. Please verify.
		Green? Agent 1.: Where several first/given names are indicated, they should preferably be separated by a comma. Please verify.
13-2-7	Validation messages Contents	Green? Reference number for attached copy of general power of attorney not indicated.
13-2-8	Validation messages Fees	Green? Please confirm that fee schedule utilized is the latest available
13-2-9	Validation messages Payment	Green? Please ensure that you have a valid deposit account with the receiving Office selected.

PCT

GENERAL POWER OF ATTORNEY

(for several international applications filed under the Patent Cooperation Treaty)

(PCT Rule 90.5)

The undersigned person(s):

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

MILLIKEN & COMPANY
P. O. Box 1926
Spartanburg, South Carolina 29304
United States of America

hereby appoint(s) the following person as:

☒ agent

☐ common representative

Name and address

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

ALEXANDER, Daniel R.
BACON, Jeffery E.
CURRENT, Sara M.
FISHER, George M.
MONAHAN, Timothy J.
MOSES, Thomas L.
PARKS, William S.
WILSON, Charlotte C.

[Handwritten signatures of Daniel R. Alexander, Jeffery E. Bacon, Sara M. Current, George M. Fisher, Timothy J. Monahan, Thomas L. Moses, William S. Parks, and Charlotte C. Wilson]

All attorneys at below address:

P. O. Box 1926
Spartanburg, South Carolina 29304
United States of America

to represent the undersigned before

☒ all the competent International Authorities

☐ the International Searching Authority only

☐ the International Preliminary Examining Authority only

in connection with any and all international applications filed by the undersigned with the following Office

UNITED STATES

as receiving Office

and to make or receive payments on behalf of the undersigned.

Signature(s) (where there are several persons, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading this power);

[Handwritten signature of Terry T. Moyer]

Terry T. Moyer
Vice President & Senior General Counsel

Date:

[Handwritten date: Jul. 9, 2001]

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ US

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only	
Identification of IPEA	Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION	
Applicant's or agent's file reference WO5060	
International application No. TO BE ASSIGNED	International filing date (day/month/year) 26 October 2001 (26.10.01)
(Earliest) Priority date (day/month/year) 14 November 2000 (14.11.00)	
Title of invention MOLDABLE COMPOSITE MATERIAL AND METHOD OF PRODUCING SAME	
Box No. II APPLICANT(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) MILLIKEN & COMPANY Legal Department (M-495) P.O. Box 1926 Spartanburg, SC 29304 United States of America	
Telephone No. (864) 503-1160	
Facsimile No. (864) 503-1999	
Teleprinter No.	
Applicant's registration No. with the Office	
State (that is, country) of nationality: US	State (that is, country) of residence: US
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
State (that is, country) of nationality:	
State (that is, country) of residence:	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
State (that is, country) of nationality:	
State (that is, country) of residence:	
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.	

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCEThe following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official designation.
The address must include postal code and name of country.)*BACON, Jeffery E.
Milliken & Company
Legal Department (M-495)
P.O. Box 1926
Spartanburg, SC 29304, United States of America

Telephone No.

(864) 503-1160

Facsimile No.

(864) 503-1999

Teleprinter No.

Agent's registration No. with the Office

35,055

☐ **Address for correspondence:** Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments:***

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filedthe description ☒ as originally filed☐ as amended under Article 34the claims ☒ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34the drawings ☒ as originally filed☐ as amended under Article 34

- 2.
- ☐
- The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.

- 3.
- ☐
- The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)).
- (This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**

The applicant hereby elects all eligible States (that is, all States which have been designated and which are bound by Chapter II of the PCT)

excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (<i>specify</i>) | : | sheets |

For International Preliminary
Examining Authority use only

received	not received
----------	--------------

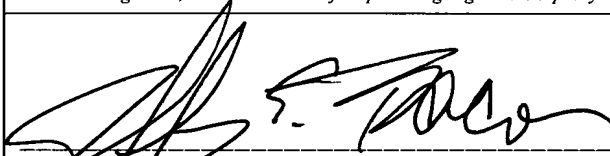
<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

The demand is also accompanied by the item(s) marked below:

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> fee calculation sheet | 5. <input type="checkbox"/> statement explaining lack of signature |
| 2. <input type="checkbox"/> original separate power of attorney | 6. <input type="checkbox"/> sequence listing in computer readable form |
| 3. <input type="checkbox"/> original general power of attorney | 7. <input type="checkbox"/> other (<i>specify</i>): |
| 4. <input type="checkbox"/> copy of general power of attorney;
reference number, if any: | |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).


 Jeffery E. Bacon
 Patent Counsel
 Milliken & Company

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply. ☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

PCT

FEE CALCULATION SHEET

Annex to the Demand

International application No. TO BE ASSIGNED	For International Preliminary Examining Authority use only									
Applicant's or agent's file reference WO5060	Date stamp of the IPEA									
Applicant Milliken & Company										
CALCULATION OF PRESCRIBED FEES										
1. Preliminary examination fee	490.00	<input type="checkbox"/> P								
2. Handling fee (<i>Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.</i>)	146.00	<input type="checkbox"/> H								
3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box	636.00									
TOTAL										
MODE OF PAYMENT										
<table style="width: 100%;"> <tr> <td><input checked="" type="checkbox"/> authorization to charge deposit account with the IPEA (see below)</td> <td><input type="checkbox"/> cash</td> </tr> <tr> <td><input type="checkbox"/> cheque</td> <td><input type="checkbox"/> revenue stamps</td> </tr> <tr> <td><input type="checkbox"/> postal money order</td> <td><input type="checkbox"/> coupons</td> </tr> <tr> <td><input type="checkbox"/> bank draft</td> <td><input type="checkbox"/> other (specify):</td> </tr> </table>			<input checked="" type="checkbox"/> authorization to charge deposit account with the IPEA (see below)	<input type="checkbox"/> cash	<input type="checkbox"/> cheque	<input type="checkbox"/> revenue stamps	<input type="checkbox"/> postal money order	<input type="checkbox"/> coupons	<input type="checkbox"/> bank draft	<input type="checkbox"/> other (specify):
<input checked="" type="checkbox"/> authorization to charge deposit account with the IPEA (see below)	<input type="checkbox"/> cash									
<input type="checkbox"/> cheque	<input type="checkbox"/> revenue stamps									
<input type="checkbox"/> postal money order	<input type="checkbox"/> coupons									
<input type="checkbox"/> bank draft	<input type="checkbox"/> other (specify):									
AUTHORIZATION TO CHARGE (OR CREDIT) DEPOSIT ACCOUNT <i>(This mode of payment may not be available at all IPEAs)</i>										
<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Authorization to charge the total fees indicated above. <input checked="" type="checkbox"/> <i>(This check-box may be marked only if the conditions for deposit accounts of the IPEA so permit)</i> Authorization to charge any deficiency or credit any overpayment in the total fees indicated above. </td> <td style="width: 50%; vertical-align: top;"> IPEA/ <u>US</u> Deposit Account No.: <u>04-0500</u> Date: <u>10 June 2002</u> Name: <u>Jeffery E. Bacon</u> Signature: </td> </tr> </table>			<input checked="" type="checkbox"/> Authorization to charge the total fees indicated above. <input checked="" type="checkbox"/> <i>(This check-box may be marked only if the conditions for deposit accounts of the IPEA so permit)</i> Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.	IPEA/ <u>US</u> Deposit Account No.: <u>04-0500</u> Date: <u>10 June 2002</u> Name: <u>Jeffery E. Bacon</u> Signature:						
<input checked="" type="checkbox"/> Authorization to charge the total fees indicated above. <input checked="" type="checkbox"/> <i>(This check-box may be marked only if the conditions for deposit accounts of the IPEA so permit)</i> Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.	IPEA/ <u>US</u> Deposit Account No.: <u>04-0500</u> Date: <u>10 June 2002</u> Name: <u>Jeffery E. Bacon</u> Signature:									